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ABSTRACT

Whether or not an innovation in education is accepted is often dependent upon its direct affect on the stability of the adopter. A framework of organizational theory provides structure and meaning for a study on differing positive/negative responses of distinct groupings of educators toward the adoption of innovative practices. Educational change occurs within the framework of a school system made up of six subsystems of students, teachers, principals, central office administrators, parents, and community; each subsystem tending toward a status quo and operating independently (although interdependently when required). In this study, involving the principal and the teacher subsystems, four educational innovations were selected and offered, each to impact in the "zone of indifference," likely to produce positive response, and in the behavioral "zone of reaction," likely to generate negative response and anxiety if confronted with change. Findings suggest that the educational subsystem required to make the greatest modifications in normal operating procedures will raise the highest level of resistance. This indicates that resistance can be predicted and furthermore, through identification of systems required to make the greatest changes, that it is possible to plan strategies that will help subsystems adapt to a program change. (SJM)

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ABSTRACT

ON SOCIAL SYSTEMS THEORY AS A PREDICTOR OF EDUCATIONAL CHANGE: THE ADOPTION OF CLASSROOM INNOVATIONS

All too often in education the "band wagon" has played an important role in the adoption of innovations. An innovation is often dropped into the school's environment by enthusiastic leaders who have the expectation that anyone can recognize its obvious merits and will adapt his behavior accordingly. Subordinates, however, make their own judgments on how to respond to the innovation and, in varying degrees, elect to accept or subvert its conditions. Within a framework of organizational theory, this study attempts to explain the differing positive/negative responses of distinct groupings of educators toward the adoption of various classifications of innovations. The findings in this study suggest that the educational subsystem or subsystems which, in order to adopt the innovation, are required to make the greatest modifications in their normal procedures of operation will raise the highest level of resistance.

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ON SOCIAL SYSTEMS THEORY AS A PREDICTOR OF EDUCATIONAL CHANGE:
THE ADOPTION OF CLASSROOM INNOVATIONS

In the case of rising demands for societal change, the school has been a particularly stubborn institution. Apparently, the reason is not a lack of ideas, sophisticated technology, or men of good will. No doubt the roots of educational resistance are interworven around a variety of psychological, historical, economic, and sociological variables; and it is no mean task to sort them out. But because innovation, as a form of change, typically must be adopted via the organizational decision-making and execution processes of the school, the literature of organizational theory has become increasingly valuable in our understanding of stability and innovative change.

In the public sector, we have long since passed the day when change was equated with the act of making a decision. An understanding of the constraints which settle in on decisions after they are made is essential if we are ever going to make major inroads toward breaking the major bottlenecks which have throttled innumerable innovative efforts in the past. This study makes use of organizational theory as a conceptual framework to aid in staging and diagnosing what this investigator believes to be a major source of constraint which impedes the adoption of innovations in schools. The study attempts to explain the differing positive/negative responses of distinct groupings of educators toward the adoption of various classifications of innovations.

The first part of this paper will concern itself with the theoretical framework which gives structure and meaning to the study.

Analytical Framework: The Concept of System

Change takes place within the framework of a system: either a personal system, if psychological variables are being investigated, or a social system, if organizational variables are being investigated. The unit of analysis in this study is the educational organization; therefore a clear understanding of the concept of social system is essential.

The basic ingredients of a social system are goal-oriented, interacting human beings whose behavior is patterned, complementary, and interdependent. The activity of a system is repetitive, predictable, coordinated and stabilized--not unlike that of a watch grinding at its familiar and predictable task. When surprises do occur in the system to disrupt the patterned equilibrium, energy is devoted to that point in order to quickly achieve stability once again.[1]

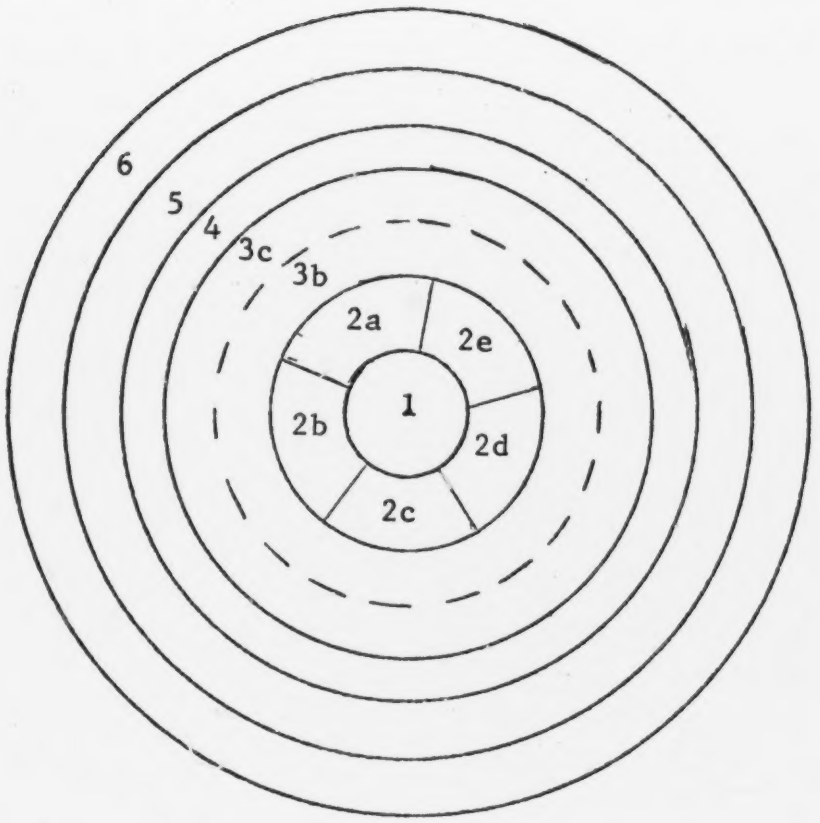
In a conceptual as well as practical sense, a school is a system made up of subsystems. In an oversimplified fashion, Figure 1 illustrates some of the subsystems associated with the school.

Each of the subsystems have all the ingredients that are identified as making up the entire system. Each of the subsystems, therefore, has its own reality quite apart, although not divorced, from the other subsystems as well as the system as a whole. For this reason, it is possible for the teacher and administrator subsystems to enter into conflict over the salary scale or for the student subsystem to demand greater voice in the decision-making processes of the teacher and administrator subsystems.

In each of the subsystems within the boundary of the school there is a level of "resonance." The idea of resonance, Whyte observes,

Figure 1

Educational Subsystems



1. Students

2. Teachers
   a. Math teachers
   b. Physical science teachers
   c. Social science teachers
   d. Physical education teachers
   e. Industrial arts teachers

3. Principals
   a. Building principals
   b. Vice principals

4. Central office administrators

5. Parents

6. Community

> "...is simply that when the work group is relatively undifferentiated as to tasks performed, pay received, and working conditions faced by individual members, it is highly likely that the problems faced by any one individual will be perceived as similar to the problems faced by other members of the work group. In this situation, as one individual gives voice to his sentiments, he is likely to find other individuals echoing the same sentiments and thus reinforcing his own."[2]

Due to the similarity of the tasks, clients, pay scale, etc., the teacher subsystem has a high level of resonance. As the teacher subsystem is broken down into its component subsystems (i.e. physical science teachers, social science teachers, etc.), an even higher level of resonance can be identified in each of the component subsystems. The school principal subsystem also has a high level of resonance, although its makeup is quite distinct from that of the teachers.

Along with the concept of "resonance," three other concepts are of major importance to this study, each of which deal with the way subsystems react to pressures for change. Chester Barnard argues that <u>authority is vested in the subordinates who receive directive communication and not with "persons of authority" who issue the orders</u>. The subordinates must decide whether to obey or disobey the directive. An act of obedience is a confirmation of its authority for him and an act of disobedience is a denial of its authority. From this perspective, it is a fiction that authority comes "down from above."

Barnard continues, stating that:

> A person can and will accept a communication as authoritative only when four conditions simultaneously obtain: (1) he can and does understand the communication; (2) <u>at the time of his decision</u> he believes that it is not inconsistent with the purpose of the organization; (3) <u>at the time of his decision</u>, he believes it to be compatible with his personal interest as a whole; and (4) he is able mentally and physically to comply with it.[3]

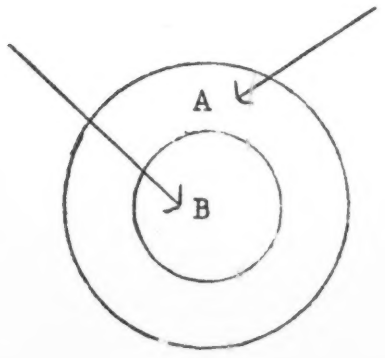
Within this context of authority, then, the subordinates of an organization have the means of supporting or subverting a change-oriented directive. It is precisely at this point where we need a far greater understanding of the behavior of subordinates regarding their motivations to support or not support "decisions from above." Entering this area is the next step in constructing the theoretical framework of the study.

In the organizational setting each individual possesses what Barnard calls a "zone of indifference." He also possesses what might be called a "zone of reaction." When policy statements, decisions, orders, etc., impact in this zone of indifference, the various subordinates normally comply. "Since the efficiency of organization is affected by the degree to which individuals assent to orders, denying the authority of an organization communication is a threat to the interests of all individuals who derive a net advantage from their connection with the organization, unless the orders are unacceptable to them also."[4]

If the orders penetrate the zone of indifference and fall within the zone of reaction, the behavior of the individuals involved possibly will take on a reactive character intended to deny the intent of the orders. For example, if the school board elects to alter from three to four the number of years teaching experience required for achieving tenure, the teachers with four or more years of experience will probably not object because the decision does not affect them (zone of indifference). However, if the school board decides to eliminate tenure altogether, the zone of reaction will have been penetrated and the teachers with four or more years of experience will react decisively--perhaps in the form of a strike.

Figure 2

Zones of Behavioral Response



A. Zone of indifference

B. Zone of reaction

The Preservation of Stability

When a subsystem's zone of reaction is penetrated by the processes of change, anxiety springs to life. A series of unknowns have entered the picture and with them come a threat which cannot be comfortably ignored. "I believe it fairly safe to say," Sullivan states, "that anybody and everybody devotes much of his lifetime and a great deal of his energy... to avoiding more anxiety than he already has and, if possible, to getting rid of some of this anxiety."[5]

The control and reduction of anxiety in either its real or potential state can have significant implications for the processes of stability and change, although mostly for stability. A number of investigators have offered their insights into the dynamics of organizational anxiety; and from their differing perspectives, they cast an image of why people struggle for stability.

For example, Blau, in his study of civil service, found that the workers' orientation towards change was related to the degree of security they found in the command of their universe. Those who objected to change were insecure in their knowledge of procedure, their colleague relationships, and their grasp of the subtleties of role

expectations.[6] Abbott asserts that, "Much of the inertia in formal organizations occurs as a result of 'sunk costs' of those organizations; in the educational enterprise, these 'sunk costs' consist of a substantial investment in training and experience, and of a psychological commitment to particular ways of programming activities."[7]

Robert Merton suggests that a major force of resistance to change comes from the displacement of goals. This concept implies a mindless conformity to rules, thus transforming the rules into goals instead of means to achieving goals. The strict adherence to the rules if a behavior intended to eliminate any possibility of being challenged for an error in judgment. If the rules are strictly conformed with, there is no need for judgment and thus no possibility of challenge.[8] March and Simon believe that, "Individuals and organizations give preferred treatment to alternatives that represent continuation of present programs over those that represent change. But this preference is not derived by calculating explicitly the costs of innovation or weighing these costs. Instead, persistence comes about primarily because the individual or organization does not search for or consider alternatives to the present course of action unless that present course is in some sense 'unsatisfactory'."[9] Unfortunately, in the field of education it is extremely difficult to label confidently a process as "unsatisfactory" because evaluative procedures tend to be subjective value judgments rather than empirically based objective judgments.

The picture which emerges from the above observations suggests that the change oriented behavior of people in systems is contrained by a need to preserve some familiar, established order of affairs with which there is a comfortable knowledge base, an accurate sense of predictability, and an established sense of security. Under these conditions a

system's zone of reaction seems to be tranquil, and the preservation of this tranquility seems to have a high priority.

Even the behavior of organizational executives is not immune to these stabilizing constraints. Lindbloom observes, "A wise policy maker expects that his policies will achieve only part of what he hopes and at the same time will produce unanticipated consequences he would have preferred to avoid. If he proceeds through a succession of incremental changes, he avoids serious lasting mistakes in several ways."[10] Stated another way, incremental change assures that the framework and securities of the present will lend their protection in the future.

Research Design and Hypothesis

Based on the theoretical framework already discussed, the following general hypothesis was constructed:

General Hypothesis

> Resistance to change is related directly to the degree to which the actors of any given system (or subsystem) are required to modify their previously established patterns of behavior in order to adopt the change.

In order to make the general hypothesis operational, therefore testable, four specific hypotheses were constructed which make use of the relationship emphasized in the general hypothesis. If the four specific hypotheses are supported by the findings, then it can be said that the general hypothesis is supported by the study.

This study involves the orientation toward change of two subsystems found in schools--the subsystem made up of principals and the subsystem made up of teachers. To test the predictive capability of the general hypothesis, four educational innovations were selected and symbolically offered to the members of the two subsystems as a means of obtaining readings on their resistance to these innovations. Two innovations were

selected because they would, if adopted, impact in the zone of indifference of the principals and in the zone of reaction of the teachers. The other two innovations were selected because they would impact in the exact opposite fashion. A specific hypothesis was formed around each of the four innovations. If the specific hypotheses are accurate predictors of resistance to change, the teachers will be more resistant than the principals with the first two innovations and the principals more resistant than the teachers with the second pair. The innovations chosen for this study were: (1) the use of behavioral objectives, (2) programmed instruction, (3) flexible (modular) scheduling, and (4) the nongraded school.

A brief description of each innovation will be presented to illustrate its intended objective as well as the impact it may have on behavioral patterns of the principals or teachers.

Programmed Instruction

The rationale behind programmed instruction is the notion that small bits of sequential information can be learned in a stimulus-response-reinforcement cycle. The cycle conditions the learner to respond correctly to the various stimuli, thus shaping the learner's behavior in a controlled, thereby predictable, direction. Learning becomes self-directed and self-motivated within this context.[11] Almost any subject matter content can be structured into this learning process and subsequently incorporated into textbooks of any degree of progressive difficulty.

A clear illustration of the disruption caused to the school teacher subsystem by the introduction of programmed instructional materials in the classroom is illustrated in a case study conducted by R. O. Carlson. The study reports that the use of programmed materials in the classroom

comes into direct conflict with the teacher's compelling need to perform. "Programmed instruction does not give the teachers as much opportunity to perform as they apparently desire; it does not give sufficient opportunity to teach. In their eyes, because teaching means performing, using programmed instruction is not teaching."[12]

Behavioral Objectives

The schools have long been severely criticized for their fuzziness concerning the goals and objectives of education. Responding to the cry for accountability in education, the use of behavioral objectives in the schools is frequently proposed as a means of making the direction of educational process clear and specific. The behavioral objective specifies (1) who the learner is, (2) the nature of the content to be learned, (3) the amount of time to learn the content, (4) the minimum level of comprehension acceptable, and (5) the method of evaluation. For example: "the third grade students will read 200 words per minute at an 80% level of comprehension by the end of the third month of instruction as evaluated by a teacher-made test."

Teachers have tended not to be overly receptive to the idea of writing and using behavioral objectives as firm guidelines because they feel much of the teaching-learning process cannot be measured, i.e. the affective domain. School principal subsystems, on the other hand, have not been extensively required to indulge themselves in the behavioral objective approach to education.

Flexible (Modular) Scheduling

The advent of flexible scheduling came with the non-too-sudden realization that the process of learning is not enhanced by chopping it into six 50-minute periods over a 5-day week. With the flexible

scheduling process, such as the Stanford School Scheduling System (SSSS),[13] it became technically possible to accommodate practically any combination of variables: (1) time, (2) teachers, (3) subject matter, (4) students, and (5) teaching strategies. The manual master schedule bottleneck had apparently been broken. The learning process could at last proceed according to the way people learn and not according to the unforgiving demands of the clock. An important dimension of the flexible scheduling process is the inclusion of student structured time. The students are to play a major role in structuring their own learning environment and schedule.

Thousands of schools across the country adopted the flexible scheduling approach to education and thousands of schools promptly dropped it. James Maxey identifies one of the major reasons:

> Good students used supervised study time to get homework finished more effectively than before modular scheduling. Many students, however, waste free time. The school using modular scheduling needs to be aware of the need for programs available to all students for using free time constructively. In fact, some schools have abandoned the flexible schedule primarily for this reason. Students were found to be roaming the halls, sitting in the parking lots, or making unwelcome visits to shopping centers. Low achievers tend to have more difficulty adapting to the flexible schedule than do average or above average students. Also, sophomores have more difficulty adjusting than do juniors or seniors.[14]

Although teachers certainly found their subsystem required change under the flexible scheduling program, the significant burden seems to have fallen on the administrator subsystem. The principals were the ones who had to: (1) sell the idea to parents, teachers, community, and students; (2) develop the technical and complex flexible schedule for students and teachers; and (3) bear the brunt of parent and teacher outbursts and objections when visible signs began showing up that the flexible schedule was frequently more abused than used--at least on the

surface. Community tension, of course, is something that school administrators are not overly pleased to encounter. In other words, the flexible schedule apparently tends to disrupt the administrator subsystem more than the teacher subsystem.

The Nongraded School

As in the case of flexible scheduling, the nongraded school openly flaunts tradition. The lock-step sequence of age-grade promotion and content coverage makes no sense in terms of our understanding of child development and learning theory. "The concept of common coverage," says Goodlad, "for all at relatively equal rates of speed confounds the intellect. The schools' function increasingly is being recognized as that of teaching student processes of inquiry through guided practice in them."[15]

In a nongraded school students are streamed into the academic process by their own level of learning and not by age. This point is the foundation of its strengths as well as the touchstone of its frequent failure. Precision testing is required for adequate student placement in the learning process, and we are rapidly finding out that we do not have precision tests--minority group students have taught us this fact. We tend to measure socioeconomic class and not intelligence or learning capability. Also, parents demand to know what grade their child is "really in," and universities want to know the age-grade achievement of their applicants. These as well as many other demands tend to collide in the administrator subsystem rather than the teacher subsystem, and the reaction is often a quick retreat to the traditional age-grade approach--if not in name, then in substance.

The four educational innovations briefly described above would, under ideal conditions, make significant contributions to the learning process of the school. However, there implementation would probably be resisted or supported in varying degrees by the various subsystems that make up the school. The specific hypotheses, as extractions of the general hypothesis, predict that the amount of modification and disruption (zone of response vs. zone of indifference) created in a specific subsystem by a specific innovation will determine how favorable the members of that subsystem look upon adoption of that innovation.

Specific Hypotheses

1. With respect to an orientation towards the adoption of behavioral objectives in the classroom, teachers will be significantly more resistant than principals.

2. With respect to an orientation towards the adoption of programmed instructional materials in the classroom, teachers will be significantly more resistant than principals.

3. With respect to an orientation towards the adoption of flexible (modular) scheduling in the classroom, principals will be significantly more resistant than teachers.

4. With respect to an orientation towards the adoption of the nongraded approach to education, principals will be significantly more resistant than teachers.

The respondents answered one question concerning each of the four innovations. The question drew responses which revealed their views toward adopting the innovations. A Likert-type response scale was used to record the differing views on the innovations.

1. Strongly agree _____
2. Agree _____
3. Not sure _____
4. Disagree _____
5. Strongly disagree _____

An analysis of variance routine was used to measure statistically significant differences between the teacher subsystems and the principal subsystems regarding their orientations toward adopting the innovations.

This study was conducted in a large county of a state located in the western part of the United States. The questionnaire was constructed, field tested, and then sent to all the physical and social science high school teachers as well as the high school, middle school, and junior high school principals in the county. All of the teachers included in the study were from schools whose principals were also included in the study. An 82.2% (N = 387) return was received from the teachers and a 93.2% (N = 41) return was received from the principals.

Findings and Discussion

The data reported in Table 1 show statistically significant differences between teacher subsystems and principal subsystems regarding three of the four innovations: (1) behavioral objectives, 1% level of confidence; (2) programmed instruction, 1% level of confidence; and (3) flexible scheduling, 5% level of confidence. The fourth specific hypothesis resulted in a 5% level of significant difference, but in reverse order of the prediction. This finding suggests that the changes associated with the nongraded school may make a greater impact on the teachers than the investigator anticipated or that some of the theoretical underpinnings of the study are not as secure as initially believed. In any case, more intensive research is required on this innovation before specific judgments can be made.

In terms of the general hypothesis, it can be said that the findings of this study lend it support--although the support is slightly tempered by the finding associated with the fourth specific hypothesis. These findings have some interesting implications for the planning, execution, and evaluation of a program of educational change.

TABLE 1

Resistance Measures on Change: Teachers vs. Administrators

Innovation	Subsystem	(N)	Weighted* Means	F Value	P
Behavioral objectives	Administrator	41	1.695	29.39	.01
	Teacher	375	2.631		
Programmed instruction	Administrator	41	2.386	8.18	.01
	Teacher	373	2.876		
Flexible scheduling	Administrator	41	3.059	4.72	.05
	Teacher	370	2.639		
Nongraded school	Administrator	40	2.275	4.06	.05
	Teacher	369	2.640		

*The higher the mean score the more negative the perspective toward change.

All too often in the field of education the "pack instinct" has played an important role in the adoption of innovations. One year the focus of attention might be on the process of Planning, Programming, Budgeting Systems (PPBS), another year it might be on the multi-cultural curriculum, and a third year on the open spaces school. The innovation is often dropped into the school's environment by enthusiastic leaders who have the expectation that anyone can recognize its obvious merits and will adapt his behavior accordingly. Subordinates, however, make their own judgments on how to respond to the innovation and, in varying degrees, accept or reject its intent. Unfortunately, it often goes unnoticed until too late that the innovation is not taking hold and is soon sloughed off like flesh rejecting a foreign body--or the innovation is carried on in name only. The planning mistake was one of being blinded by the seeming brilliance of the innovation and thereby blind to the threat that the innovation held for one or more of the subsystems of the school.

To avoid this problem, a skilled and sensitive leader must be extremely knowledgeable concerning the bread and butter insecurities and costs (i.e. prior training, status) as well as rewards that will accrue to the members of the various subsystems of the school. Recalling Barnard's argument, many of the concerns are not the type that can be defended in open debate on rational grounds, but nevertheless prove to be telling forces in a shadow struggle to defeat the successful implementation of the innovation. For example, many teachers will oppose the open spaces school concept because it makes their teaching continually visible to colleagues and superiors.

Many educational leaders will look at these hidden concerns as petty or as a weakness in the motivation or character of the people who

hold them. It is often difficult for the educational leaders making the decisions to objectively understand the basic concerns of some of the subsystems, especially if the leaders are part of a subsystem that will not be intensely disrupted by the adoption of the innovation (zone of indifference).

As an educational system enters the decision-making process to select one of the several possible alternative innovations, a wise position to take would be to seek out the opinions of the members of subsystems that will be affected--especially those that will be required to make a <u>significant change</u> in their standard procedure. In some instances this activity might bring into the discussion views of groups not normally part of the decision-making process, such as the janitors, minority group students, and parent groups. This broad range collaboration will have the effect of not only creating a sense of participation in decision-making, it will also give those subsystems which will receive the greatest jolt of change a stake in the successful outcome of the operation. If this procedure is followed, the potential dissident groups may be neutralized because of their significant input into the discussion to adopt the innovation.

In the execution phase of an innovative practice, some resources are usually available for in-service training. Instead of providing the additional training for the leadership structure of the school (i.e. vice principals, department chairmen), it might be more effective to concentrate the resources on those subsystems that will be required to make the greatest changes. This group might be low in status and seniority, such as the beginning teachers, or very high power and prestige, such as the central office officials. If the school, for example, wants to inaugurate a nongraded school program, it might be wise to use the

training resources for educating the parents of the high socioeconomic strata as to the importance of this educational approach. These parents are the ones who can do the most to abort a new program if they think their children's opportunity to get into an outstanding university is going to be jeopardized.

Also important to the execution phase is creation of a sense of urgency and commitment which is not paralleled by a sense of insecurity over the outcome. The evaluation procedures selected will play a significant role in this outcome.

In order to reduce the levels of anxiety and tension, it is probably wise to eliminate the evaluative axis of success and failure and use a less threatening axis of limited progress and extensive progress. Usually the first cycle of change is uncertain and confusing; therefore, it might be wise to eliminate evaluative stages altogether until a new level of stability is reached which incorporates the innovation as a standard part of the program. This tactic will tend to retard the level of insecurity felt in specific subsystems regarding the first stages of a program of change.

Conclusion

Stability and change play an important role in the goal-directed activity of organizations. However, when either come in the extreme, the overall effect can be exceedingly dysfunctional--on one hand through sociotechnical lag and on the other through unsystematic and fragmented procedure. In the educational organization there is usually no contest. The weight of behavior almost inevitably falls towards stability rather than change.

The findings of this study suggest that when a program of innovative change is proposed for a school, it may well be possible to predict which of the various subsystems of the school will offer the most resistance. Having this predictive capability, it becomes possible to plan, organize and evaluate programs of change which will have a greater opportunity for success than otherwise might be the case. The findings of this study suggest that the subsystem or subsystems which are required to make the greatest modifications in their normal procedures of operation will raise the highest level of resistance. This finding seems important because more precise information relative to the possible sources of resistance to change may make it possible to develop strategies which will speed up processes of educational innovation in the schools.

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